

THERE

Technical Work : 450 h.p. from 8 Litres

of step with the art, and its revision and modernisation have become progressively more important. This is the revision. Or, at least, it was started as a revision. As the work went forward it became apparent that there was so much that needed to be added, and so little that could remain unchanged, that revision gave way to complete rewriting, and that in turn to subdivision. A treatment of the aerodynamics of design adequate for the serious student can no longer be confined within a single pair of covers and not grow too bulky to handle. The subject has been split, and performance alone, and the basic aerodynamic laws and phenomena and collected data which control performance, are treated here. Stability and control will follow in another volume."

Throughout the book there is evident a desire on the part of the author to make his book as suitable for the man who studies at home as for the student who attends classes. This is not the least valuable feature of the book, for it means that young draughtsmen and other workers in aircraft factories can, if they have the will, study the science of aerodynamics in relation to performance calculations in their spare time and thus make themselves more useful to their employers and to themselves.

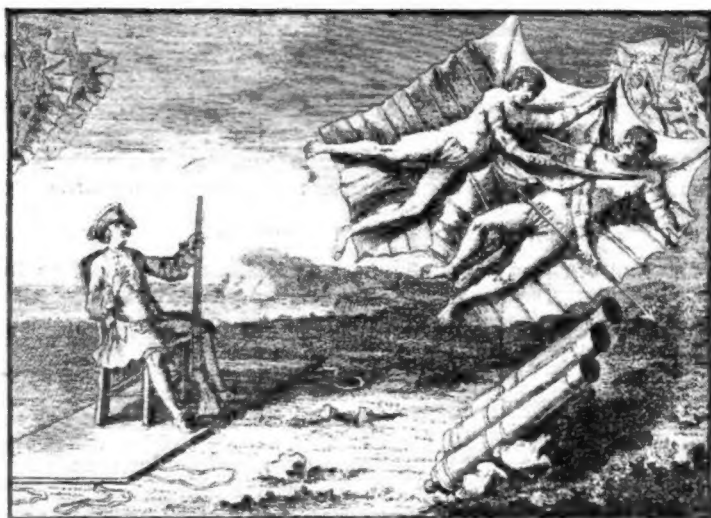
Fundamentals Thoroughly Discussed

Of the 642 pages of the book, the first 446 deal with fundamentals such as aerofoil theory, induced and profile drag, parasite drag, and so forth. The rest of the book deals in turn with power plant characteristics, airscrew characteristics, and, finally, with performance curves and their construction.

That the book is thoroughly up-to-date is shown by the fact that boundary layer control and the possibilities of using it for obtaining increased lift and decreased drag are discussed. This is a subject which is only just beginning to be examined seriously by research workers and aircraft designers.

A welcome inclusion in the section on induced drag is a simple explanation of F. W. Lanchester's sweep or momentum theory which, while not so rigorous as the vortex theory and rather incomplete, involves only elementary mechanics.

Performance is so well arranged, so carefully planned and so thoroughly executed that one hesitates to offer even a very mild criticism. Worked-out numerical examples might have been included in many of the chapters. They assist the student to a surprising degree. But probably considerations of space were responsible for their omission. The theory of the Auto-giro is *terra incognita* to most students, and its inclusion in the book would have been welcomed by many. It is small conso-



SURELY THE FIRST visualisation of an anti-aircraft battery, this drawing is from a book published in 1763 and entitled *Les Hommes Volans*. The low-altitude engagement between the two "Gladiators" is equally interesting. The book is one of hundreds of rare and historical works dealt with in considerable detail in a catalogue entitled *The History of Flight* and issued by Maggs Bros. Ltd., 34/35, Conduit Street, London, W.1. The catalogue also contains a section on air mail stamps.

lation to read, on page 4, that "the basic theory has been developed almost exclusively, and is to a large extent held in confidence, by Señor de la Cierva and his associates." Can it be that Mr. Warner distrusts the official publications which have appeared on the subject of rotating-wing aircraft? Certainly the scale effect which has been found to exist largely nullifies the conclusions based upon model tests, but one feels entitled to expect some treatment of the theory of the Auto-giro in a book of the uniformly high standard of *Performance*.

Air France Mail Souvenirs on Show

AIR France are exhibiting an interesting collection of "flown covers" at the Stamp Exhibition which opens at Dorland Hall next Saturday, October 17. The covers, about thirty in number, are contained in two large frames and include envelopes bearing cancellation marks for a number of pioneering flights carried out by the company.

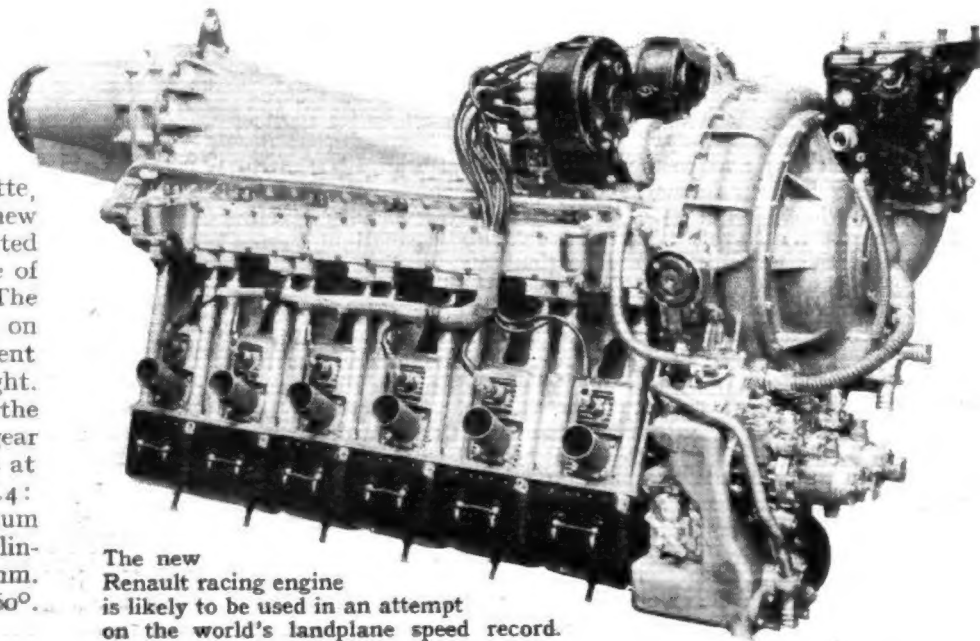
Among the most interesting are the first flight from China to Europe by a regular air mail service, the first all-air mail service across the South Atlantic.

COMPRESSED POWER

The New Renault Inverted Vee-Twelve : 450 h.p. from Eight Litres

IT was intended that, after the Coupe Deutsche Race on September 13 (which event was won by Yves Lacombe, on a Caudron-Renault monoplane of 1934 vintage at an average speed of 233 m.p.h.) an attempt should be made on the world's landplane speed record by Delmotte, the chief Caudron test pilot, using a new low-wing Caudron fitted with an inverted air-cooled twelve-cylinder Renault engine of only 8 litres (488.8 cu. in.) capacity. The weather militated against the attempt on that occasion and Delmotte had to content himself with a short demonstration flight.

A geared and supercharged model, the new engine runs at 4,500 r.p.m., the gear ratio being 2:3. The supercharger turns at 28,500 r.p.m.; the compression ratio is 6.4:1; the weight 700 lb.; and the maximum cross section about 20½ inches. The cylinders, which have a bore and stroke of 90 mm. and 96.5 mm. respectively, are set at 60°. At ground level 450 h.p. is claimed.



The new Renault racing engine is likely to be used in an attempt on the world's landplane speed record.